Air Quality Permitting
Statement of Basis

September 15, 2005

Permit to Construct No. P-040023

Seminis Vegetable Seeds, Nampa

Facility ID No. 027-00072

Prepared by:

Harbi Elshafei, Air Quality Permitting Analyst 3
AIR QUALITY DIVISION

FINAL

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

AAC	acceptable ambient concentration
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	Operation and Maintenance
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
Seminis	Seminis Vegetable Seeds
SIP	State Implementation Plan
TAP	toxic air pollutant
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

The Seminis facility consists of 17 main buildings that include: the office, R&D, bean and pea receiving, bean and pea cleaning, corn receiving, corn husking, corn kernel removal, seed treatment, packaging, and additional buildings for product and equipment.

The bean and pea seed processing operation begins with raw seeds shipped to the facility via flat or hopper bottom trucks. The seeds are transferred from the trucks onto a receiving conveyor in the receiving building. The conveyor system transfers the seeds into a series of steel bins. The incoming product is weighed and analyzed for moisture content and product quality. It is then transferred with mobile forklifts to the seed cleaning line building for cleaning and sorting. A small percentage of product arrives at the Seminis facility already in steel bins, bypassing the receiving line, and is transferred directly to the cleaning line building. Once cleaning and sorting is completed, the seeds are transferred to the seed storage building until customers request product orders. Upon customer requests, the seeds are transferred to the seed treatment and packaging building. Seeds are coated with appropriate herbicide and pesticide according to customer requests or growing conditions. After seed coating is completed, seeds are packaged, placed on pallets, and prepared for shipment off-site by rail or trucks.

All incoming product is received in bulk seed form, except for corn, which is received on the cob. The corn is husked and dried, and then the kernels are removed from the cob and incorporated into the cleaning and treatment process. The product is packaged after processing and stored prior to shipment off-site.

All products go through the following general steps:

1. Receiving, grading, sorting, testing
2. Cleaning, inspection
3. Chemical treatment
4. Final inspection, testing
5. Packaging, storage
6. shipment off-site

Corn undergoes these additional steps:

1. Husking
2. Drying
3. Kernel removal
4. Incorporation into the general process

In addition to emissions units associated with the seed processing operation, the facility includes drying lines that are used to dry corn and seed. The drying lines are composed of nine Maxon natural gas burner units. When in use, each drying line uses centrifugal fans to pull large volumes of air across a gas burner, heating the air. During the summer months, natural gas burners are not used to heat the air. Hot ambient air is simply pulled through the tunnels and is sufficient to dry the product. Hot air is then pushed through underground tunnels, which are equipped with horizontal vent slots at and above ground level. The vent slots are configured to accept metal bins containing seeds for drying. Bins can be stacked up to four bins high. Two of the Maxon natural gas dryers were exempt from PTC requirements in accordance with IDAPA 58.01.01.222.02.c. The exemption letter was issued to Asgrow Seed (now known as Seminis Vegetable Seeds) and was issued on March 3, 1993.

All corn is dried prior to further processing and a small percentage of beans and seeds require drying to reduce moisture content. All incoming product is transferred to the drying lines via forklift and is stacked on the dryer vent slots to allow for drying of multiple bins at once.

Combustion emissions from the dryers are emitted as fugitives.

Emissions of criteria air pollutants, TAPs, and HAPs are generated and released to the atmosphere from the seed processing operations. Combustion emissions are generated from operation of the nine Maxon natural gas combustion units. The emissions are created by combusting the natural gas fuel used to run the corn drying equipment.

Fugitive emissions also occur from truck unloading of seeds and from trucks driving on paved and unpaved roads. Process particulate fugitives emissions include the corn receiving process, corn drying process, and facility-wide process emissions not captured by the baghouses.

Particulate matter emissions from the seed processing operations are controlled by nine baghouses. Specifications of the baghouses are included in Table 1.1 of the PTC.

3. FACILITY / AREA CLASSIFICATION

Seminis is not a major facility as defined by IDAPA 58.01.01.205, nor is it a designated facility as defined by IDAPA 58.01.01.006.27. The facility is not subject to any NSPS, NESHAP, or MACT requirements. The Aerometric Information Retrieval System (AIRS) facility classification for this facility is "B" because the uncontrolled potential to emit is below applicable major source thresholds. The AIRS provided in Appendix A of this statement of basis defines the classification for each regulated air pollutant at Seminis.

The primary Standard Industrial Classification for the facility is 0723, *Crop Preparation Services for Market, Except Cotton Ginning.*

Seminis is located in the city of Nampa, which is located in Canyon County. Canyon County is located within AQCR 64 and UTM zone 11. This area is classified as unclassifiable for all regulated criteria air pollutants.

4. APPLICATION SCOPE

On August 26, 2003, DEQ received an application from Seminis to obtain a permit to construct (PTC) for the facility. The facility was constructed without a previously obtained PTC from DEQ.

4.1 Application Chronology

August 26, 2003	DEQ received application from Seminis for permit to construct. The permit number assigned for this project was PTC No. P-040023.
September 22, 2003	DEQ determined the P-040023 application incomplete.
October 17, 2003	DEQ received a letter from Seminis's consultant, Tetra Tech EM, Inc. in which they requested a 60-day extension to respond to DEQ's incompleteness letter.
October 31, 2003	DEQ granted a 60-day extension letter to Seminis.
March 11, 2004	DEQ received Seminis's Dispersion Modeling Protocol.
July 27, 2004	DEQ received additional information, including air dispersion modeling from Seminis.
August 25, 2004	DEQ determined the P-040023 application incomplete for the second time.
April 12, 2005	DEQ received additional information from Seminis.
May 11, 2005	DEQ determined the P-040023 application complete.
May 16, 2005	Seminis requested to review a draft of PTC No. P-040023 prior to the final issuance.
May 17, 2005	DEQ received a letter that was signed by Seminis's responsible official in which it certified that the submitted documents are consistent with IDAPA 58.01.01.123 of the Rules.
June 9, 2005	DEQ provided an opportunity for public comment period on the PTC application, in accordance with IDAPA 58.01.01.209.01.c, from June 9, 2005 to July 8, 2005. There were no comments on the application and no requests for a public comment period on DEQ's proposed action.
June 29, 2005	DEQ sent Boise Regional Office a copy of draft PTC No. P-040023 for review.
July 8, 2005	DEQ sent Seminis a copy of draft PTC No. P-040023 for review.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action:

Equipment Listing

Table 5.1 contains the equipment listing and the emissions controls.

Table 5.1 EQUIPMENT LISTING AND EMISSIONS CONTROLS

Permit Sections	Source Description	Emissions Control(s)
2	Seed Processing Operations Seminis Vegetable Seeds is an existing facility that incorporates processes and handling equipment to receive, clean, treat, and package beans, peas, corn, and onion for transport off-site. Processes at the facility are: 1. Seed and corn receiving. The PM_{10} emissions are controlled by baghouse #1. 2. Conditioning line 1. The PM_{10} emissions are controlled by baghouse #2. 3. Conditioning line 2. The PM_{10} emissions are controlled by baghouse #3. 4. Electric sorting line. The PM_{10} emissions are controlled by baghouse #4 and baghouse #9. 5. Seed treatment and packaging Line 1. The PM_{10} emissions are controlled by baghouse #6. 6. Seed treatment and packaging Line 2. The PM_{10} emissions are controlled by baghouse #5. 7. Corn sheller line. The PM_{10} emissions are controlled by baghouse #7. 8. Mini-pack line. The PM_{10} emissions are controlled by baghouse #8.	Particulate emissions from seed processing at the facility are controlled by Baghouses that have the following specifications: Baghouse #1 Manufacturer: Torit/Donaldson Model No: 4DF32 Serial No.: 193067 PM_{10} removal efficiency: 99.99% Type filter: Ultra-web cartridges Air-to-cloth ratio: 1.5:1 Baghouse #2 Manufacturer: Alanco Environmental Model No: 312RLP-10 PM_{10} removal efficiency: 99.9% Baghouse #3 Manufacturer: Alanco Environmental Model No: 188RLP-10 PM_{10} removal efficiency: 99.9% Baghouse #4 Manufacturer: Torit Model No: 84; Serial No.: C-1647 PM_{10} removal efficiency: 99.9% Baghouse #5 Manufacturer: U.S. Air Filtration, Inc. Model No.: not available PM_{10} removal efficiency: 99.9% Baghouse #6 Manufacturer: Alanco Environmental Model No.: Not available PM_{10} removal efficiency: 99.9% Baghouse #7 Manufacturer: U.S. Air Filtration, Inc. Model No.: Not available PM_{10} removal efficiency: 99.9% Baghouse #8 Manufacturer: Mac Model No.: 39AVSC25 Serial no.:94VSF05-016 PM_{10} removal efficiency: 95% Baghouse #9 Manufacturer: Air Sentry Model No: 180 SB; Serial No.: 079404 PM_{10} removal efficiency: 95%
3	Corn and Seed Drying Corn and seed drying is achieved by using nine identical drying lines composed of nine Maxon natural burner units. The total maximum hourly combustion rate for the nine dryers is 47 million British thermal units (MMBtu).	No emissions control

5.2 Emissions Inventory

There are no established emissions factors for seed treatment operations. To estimate emissions from their seed treatment facility, Seminis used emissions factors from U.S. EPA's *Compilation of Air Pollutant Emission Factors*, AP-42, Section 9.9.1, Grain Elevator and Processes, 4/03. These emissions factors in section 9.9.1 of AP-42 are the most representative for estimating emissions for this source.

Toxic air pollutant (TAPs) and hazardous air pollutants (HAPs) emissions estimates are shown in Appendix A of this statement of basis. The emissions estimates show that emissions of any single HAP is less than 10 T/yr. Emissions of two HAPs or more were estimated to be below the major source threshold of 25 T/yr for a combination of two HAPs or more.

The emissions estimates presented in Appendix A of this document provided the basis for the PM_{10} emissions incorporated in the permit. They also provided the basis for the NAAQS analysis and for determining the processing fee assessed in accordance with IDAPA 58.01.01.225.

Table 5.2 provides a summary of the emissions estimates from the facility.

A detailed emissions inventory from the facility is included in Appendix A.

Table 5.2 POTENTIAL EMISSIONS FROM THE BEANS, PEAS, CORN, AND ONION PROCESSING OPERATION AND CORN AND SEEDS DRYERS

Source Description	PM_{10}[a]		CO[b]		NO_x[c]		SO_2[d]		VOC[e]		EG[f]		Captan[g]	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Beans, peas, corn, and onion processing operation stacks	0.053	0.031	--	--	--	--	--	--	18.27	15.90	0.55	0.48	2.60	2.26
Maxon dryers (process fugitive emissions)	0.17	0.12	--	--	--	--	--	--	--	--	--	--	--	--
Maxon dryers (combustion fugitive emissions)	1.14	1.95	12.6	21.6	15.1	25.7	0.1	0.15	5.35	4.72	--	--	--	--
Total	2.51	4.1	12.6	21.6	15.1	25.7	0.1	0.15	23.62	20.62	0.55	0.48	2.60	2.26

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[b] Carbon monoxide
[c] Nitrogen oxides
[d] Sulfur dioxide
[e] Volatile organic compound
[f] Ethylene glycol, which is a TAP and a HAP
[g] Captan, which is a TAP and a HAP

5.3 Modeling

Refer to the modeling review memorandum contained in Appendix C of this statement of basis for a discussion of the air dispersion analysis conducted for this project. Based on the modeling review memorandum, DEQ has determined that emissions of PM_{10}, CO, and NO_x from the facility have been successfully demonstrated to not cause or significantly contribute to violations of NAAQS. The SO_2, emissions were below the applicable modeling thresholds – refer to the State of Idaho Air Quality Modeling Guideline (2002). TAPs emissions from the facility show compliance with the TAPs increments in accordance with IDAPA 58.01.01.585-586.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

Seminis proposes to construct a stationary source that does not qualify for PTC exemption in any of Sections 220 through 223 of the Rules. Therefore, a PTC is required.

IDAPA 58.01.01.203 ..... Permit Requirements for New and Modified Stationary Sources

Ambient air quality modeling has predicted the facility will not violate the National Ambient Air Quality Standards, and Toxic Air Pollutant increments.

IDAPA 58.01.01.205 ..... Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas

This facility is not a PSD major facility; therefore, PSD permitting requirements do not apply.

IDAPA 58.01.01.625 ..... Visible Emissions Limitation

Emissions from all stationary point sources in the state of Idaho are required to comply with the opacity standards of IDAPA 58.01.01.625-626, unless exempted under Section 625.01. The Seeds processing operation baghouse stacks at the facility are subject to this standard.

IDAPA 58.01.01.650 ..... Rules for the Control of Fugitive Dust

All stationary sources are required to comply with the fugitive dust prevention requirements of IDAPA 58.01.01.650-651.

40 CFR 60 ..... New Source Performance Standards

Seminis is not currently subject to terms and provisions of New Source Performance Standards, 40 CFR 60.

40 CFR 61 and 63 ..... National Emission Standards for Hazardous Air Pollutants and Maximum Achievable Control Technology

The facility is not currently subject to any National Emission Standard for Hazardous Air Pollutants (NESHAP) or Maximum Achievable Control Technology (MACT) requirements.

6. PERMIT CONDITIONS

Permit Condition 2.4 *Emissions Limits* – establishes the facility potential to emit, 0.05 lb/hr and 0.03 T/yr PM_{10}. The potential to emit is based on the throughput limit in Permit Condition 2.6

Permit Condition 2.6 Seed *Throughput Limits* – establishes seeds throughput from the seed processing operations to limit the facility's potential to emit below major source thresholds. The throughput limit was established taking into account the efficiencies of the seeds processing baghouses.

Permit Condition 2.7 *baghouse Monitoring Equipment* - requires that the permittee install, calibrate, operate, and maintain a pressure drop monitoring device to measure the pressure drop across each baghouse to assure the baghouse is operating within the manufacturer's specifications, thereby minimizing emissions.

Permit Condition 2.8 *Operations and Maintenance Manual* – requires that the permittee develop an O&M manual for each baghouse within 60 days of issuance of the permit.

Permit Condition 2.9 *Pressure Drop Across the Baghouse* – requires that the permittee maintain the pressure drop across each baghouse within O&M manual and the baghouse manufacturer's specifications.

Permit Condition 2.10 *Maintenance and Operation of the Baghouses* – requires maintain and operate the baghouses according to the O&M manual and baghouse manufacturer's specifications and recommendations.

Permit Condition 2.13 *Reasonable Control of Fugitive Emissions* – requires reasonable control of fugitive emissions in accordance with IDAPA 58.01.01.650-651.

Permit Condition 2.12 *Throughput Monitoring* – requires the permittee to monitor and record the beans, peas, corn, and onion throughput from the seeds processing operation monthly and annually to demonstrate compliance with Permit Condition 2.6.

Permit Condition 2.12 *Baghouse Pressure Drop Monitoring* – requires that the permittee monitor and record the pressure drop across each of baghouses once per day when operating.

Permit Condition 3.3 *Fuel-Burning Equipment Limit* – limits the particulate matter emissions from each of the dryer stacks to 0.015 gr/dscf of effluent gas corrected to 3% oxygen in accordance with IDAPA 58.01.01.677 of the *Rules*.

Permit Condition 3.4 *Natural Gas Combustion limit* – requires that the permittee to limit the total maximum natural gas consumption of the Maxon dryers to 514 million standard cubic feet in any 12-month period.

Permit Condition 3.5 *Natural Gas Fuel Combustion* – requires that the permittee to monitor and record the monthly and annually the total amount of natural gas combusted in the Maxon dryers to demonstrate compliance with Permit Condition 3.4.

7. PERMIT FEES

Seminis paid the PTC application fee on November 20, 2003. In accordance with IDAPA 58.01.01.225 and .226 a PTC processing fee of $5,000.00 is required because the increase in emissions from the facility is between 10 and 100 T/yr. The processing fee was paid on September 7, 2005.

Table 7.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0	0	0
SO_2	0	0	0
CO	0	0	0
PM_{10}	0.031	0	0.031
VOC	15.90	0	15.90
TAPS/HAPS	2.74	0	2.74
Total:	18.67	0	**18.67**
Fee Due	**$5,000.00**		

8. PERMIT REVIEW

8.1 Regional Review of Draft Permit

DEQ's Boise Regional Office was provided the draft permit for review on June 29, 2005.

8.2 Facility Review of Draft Permit

The facility was provided the draft permit for review on July 8, 2005.

8.3 Public Comment

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. from June 9, 2005 through July 8, 2005. During this time, there were no comments on the application and no requests for public comment period on DEQ's proposed action.

9. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that Seminis Vegetable Seeds be issued a final PTC No. P-040023. An opportunity for public comment on the air quality aspects of the proposed permit to construct was provided in accordance with IDAPA 58.01.01.209.01.c.

HE/sd Permit No. P-040023
G:\Air Quality\Stationary Source\SS Ltd\PTC\Seminis\Final\P-040023 Final SB.doc

APPENDIX A

Seminis Vegetable Seeds

P-040023

Emissions Inventory

SUMMARY OF TOTAL EMISSIONS FROM THE SEMINIS FACILITY

	PTE Emissions		Current Emission (based on product throughput for 2004 harvest season)		Projected Emissions (with 25% Production Increase)	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Criteria Air Pollutants						
TSP (uncontrolled/fugitive)	10.34	14.67	4.24	3.60	5.00	4.50
PM-10 (uncontrolled/fugitive)	4.74	6.52	2.29	2.27	2.35	2.80
TSP (baghouse)	NA	NA	1.78	2.02	1.28	2.04
PM-10 (baghouse)	NA	NA	1.32	1.69	1.20	1.99
TSP (Fugitive)	NA	NA	3.89	2.87	5.75	3.58
PM-10 (Fugitive)	NA	NA	0.18	0.18	0.38	0.22
Sulfur =	0.05	0.20	0.05	0.06	0.06	0.08
SO2 =	0.09	0.40	0.09	0.12	0.09	0.15
NOx =	15.06	65.95	15.05	20.55	15.06	25.68
CO =	12.65	55.40	12.65	17.26	12.66	21.58
Total VOCs =	81.98	55.95	19.06	16.49	23.61	20.62
Hazardous Air Pollutants (HAP)						
Ethylene Glycol	2.22	1.34	0.44	0.38	0.55	0.48
Captan	10.46	6.31	2.08	1.81	2.60	2.26
Pb =	7.53E-05	3.30E-04	7.53E-05	1.03E-04	7.53E-05	1.28E-04
As =	9.22E-06	4.04E-05	9.22E-06	1.26E-05	9.22E-06	1.57E-05
Be =	5.53E-07	2.42E-06	5.53E-07	7.55E-07	5.53E-07	9.43E-07
Cd =	5.07E-05	2.22E-04	5.07E-05	6.92E-05	5.07E-05	8.65E-05
Cr =	6.45E-05	2.83E-04	6.45E-05	8.81E-05	6.45E-05	1.10E-04
Hg =	1.20E-05	5.25E-05	1.20E-05	1.64E-05	1.20E-05	2.04E-05
Mn =	1.75E-05	7.67E-05	1.75E-05	2.39E-05	1.75E-05	2.99E-05
Ni =	9.68E-05	4.24E-04	9.68E-05	1.32E-04	9.68E-05	1.65E-04
Se =	1.11E-06	4.84E-06	1.11E-06	1.51E-06	1.11E-06	1.89E-06
Benzene =	9.68E-05	4.24E-04	9.68E-05	1.32E-04	9.68E-05	1.65E-04
Toluene =	1.57E-04	6.86E-04	1.57E-04	2.14E-04	1.57E-04	2.67E-04
Formaldehyde =	3.46E-03	1.51E-02	3.46E-03	4.72E-03	3.46E-03	5.90E-03
Napthalene =	2.81E-05	1.23E-04	2.81E-05	3.84E-05	2.81E-05	4.80E-05
HAP Total	12.66	7.66	2.52	2.20	3.15	2.75

Baghouse #1
Pea & Bean Receiving

Emission factors:		Units:	Source:
TSP =	0.18	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain receiving.
PM-10 =	0.059	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain receiving. Based on worse case scenario (straight truck receiving)

Potential to Emit

Maximum hourly throughput:	22.0	tons/hr
Maximum annual throughput:	49,786.0	tons/year

Current Operations:

Hourly throughput:	6.60	tons/hour
Annual throughput:	7445.00	tons/year

Projected Operations:

Projected Hourly throughput:	8.25	tons/hour
Projected Annual throughput:	9306.25	tons/year

Notes:
controlled and fugitive emissions
1 Assume 90% of emissions captured by baghouse
2 Assume 10% of emissions become fugitive
3 Assume 95% of baghouse emissions captured
4 Assume 100% of product goes through receiving

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled) =	3.96	4.48	1.19	0.67	1.49	0.84
PM-10 (Uncontrolled) =	1.30	1.47	0.39	0.22	0.49	0.27
TSP (baghouse) =	NA	NA	0.05	0.03	0.07	0.04
PM-10 (baghouse) =	NA	NA	0.02	0.01	0.02	0.01
TSP (fugitive) =	NA	NA	0.12	0.07	0.15	0.08
PM-10 (fugitive) =	NA	NA	0.04	0.02	0.05	0.03

Baghouse #2
Corn/Pea Cleaning/Cleaning line #1

Emission factors:		Units:	Source:
TSP =	0.075	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain cleaning - Internal vibrating.
PM-10 =	0.019	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain cleaning - Internal vibrating.

Potential to Emit*:

Maximum hourly throughput:	3.10	tons/hr
Maximum annual throughput:	24,893.00	tons/year

* Based on 50% of product through cleaning line #1 and 50%through cleaning line #2

Current Operations*:

Hourly throughput:	1.93	tons/hour
Annual throughput:	6,555.00	tons/year

Notes (controlled and fugitive emissions):

1 Assume 90% of emissions captured by baghouse
2 Assume 10% of emissions become fugitive
3 Assume 95% of baghouse emissions captured

Projected Operations:

Projected Hourly throughput:	1.93	tons/hour
Projected Annual throughput:	8,193.75	tons/year

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled) =	0.23	0.93	0.14	0.25	0.18	0.31
PM-10 (Uncontrolled =	0.06	0.24	0.04	0.06	0.04	0.06
TSP (baghouse) =	NA	NA	0.007	0.011	0.009	0.014
PM-10 (baghouse) =	NA	NA	0.002	0.003	0.002	0.004
TSP (fugitive) =	NA	NA	0.014	0.025	0.018	0.031
PM-10 (fugitive) =	NA	NA	0.004	0.006	0.004	0.006

Baghouse #3
Bean/Pea Cleaning/Cleaning line #2

Emission factors:		Units:	Source:
TSP =	0.075	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain cleaning - Internal vibrating.
PM-10 =	0.019	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain cleaning - Internal vibrating.

Potential to Emit

Maximum hourly throughput:	6.2	tons/hr	* Based on 50% of product through cleaning line #2 and 50%through cleaning line #1
Maximum annual throughput:	24,893.0	tons/year	

Current Operations:

Hourly throughput:	2.0	tons/hour
Annual throughput:	6,465.0	tons/year

Projected Operations:

Projected Hourly throughput:	2.0	tons/hour
Projected Annual throughput:	8,081.3	tons/year

Notes (controlled and fugitive emissions):

1 Assume 90% of emissions captured by baghouse
2 Assume 10% of emissions become fugitive
3 Assume 95% of baghouse emissions captured

Hourly PTE Equations: 6.2 ton/hr x 0.5 = 3.1 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.5 = 24893 ton/yr
Hourly Current Equations: = 2.0 ton/hr
Annual Current Equations: = 6,465 ton/yr
Hourly Projected Equations: =2.0 ton/hr
Annual Projected Equations: 6,465 ton/yr x 1.25 = 8,081.3 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled) =	0.47	0.93	0.15	0.24	0.19	0.30
PM-10 (Uncontrolled	0.12	0.24	0.04	0.06	0.04	0.06
TSP (baghouse) =	NA	NA	0.007	0.011	0.009	0.014
PM-10 (baghouse) =	NA	NA	0.002	0.003	0.002	0.003
TSP (fugitive) =	NA	NA	0.015	0.024	0.019	0.030
PM-10 (fugitive) =	NA	NA	0.004	0.006	0.006	0.008

Baghouse #4/Baghouse #9
Electric Sorter

Emission factors:		Units:	Source:
TSP =	0.061	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.
PM-10 =	0.034	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.

Potential to Emit:

Maximum hourly throughput:	3.9	tons/hr
Maximum annual throughput:	9,957.2	tons/year
Current Operations:		
Hourly throughput:	1.5	tons/hour
Annual throughput:	2,178.0	tons/year
Projected Operations:		
Projected Hourly throughput:	1.5	tons/hour
Projected Annual throughput:	2,722.5	tons/year

Notes (controlled and fugitive emissions):

1 Assume 90% of emissions captured by baghouse
2 Assume 10% of emissions become fugitive
3 Assume 95% of baghouse emissions captured
4 Assume 20% of product goes through electric sorter

Hourly PTE Equations: = 3.9 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.2 =9,957.2 ton/yr
Hourly Current Equations: = 1.5 ton/hr
Annual Current Equations: = 2,178 ton/yr
Hourly Projected Equations: = 1.5 ton/hr
Annual Projected Equations: = 2,72.5 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled) =	0.23	0.30	0.09	0.07	0.11	0.08
PM-10 (Uncontrolled) =	0.13	0.17	0.05	0.04	0.05	0.05
TSP (baghouse) =	NA	NA	0.004	0.003	0.005	0.004
PM-10 (baghouse) =	NA	NA	0.002	0.002	0.003	0.002
TSP (fugitive) =	NA	NA	0.009	0.007	0.011	0.008
PM-10 (fugitive) =	NA	NA	0.005	0.004	0.006	0.005

Baghouse #5
Treatment/Packaging Facility Line #2

Emission factors:		Units:	Source:
TSP =	0.081	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.
PM-10 =	0.034	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.

Potential to Emit

Maximum hourly throughput:	11.6	tons/hr
Maximum annual throughput:	9,957.2	tons/year

Current Operations:

Hourly throughput:	3.2	tons/hour
Annual throughput:	2,042.0	tons/year

Projected Operations:

Projected Hourly throughput:	3.2	tons/hour
Projected Annual throughput:	2,552.5	tons/year

Notes (controlled and fugitive emissions):

1 Assume 90% of emissions captured by baghouse
2 Assume 10% of emissions become fugitive
3 Assume 95% of baghouse emissions captured
4 Assume 20% of product goes through treatment and packaging line #2

Hourly PTE Equations: = 11.6 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.2 =9,957.2 ton/yr
Hourly Current Equations: = 3.2 ton/hr
Annual Current Equations: = 2,042.0 ton/yr
Hourly Projected Equations: = 3.2 ton/hr
Annual Projected Equations: 2,042.0 ton/yr x 1.25 = 2,552.5 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled) =	0.70	0.30	0.20	0.082	0.244	0.078
PM-10 (Uncontrolled) =	0.39	0.17	0.11	0.036	0.109	0.043
TSP (baghouse) =	NA	NA	0.009	0.003	0.011	0.004
PM-10 (baghouse) =	NA	NA	0.005	0.002	0.006	0.002
TSP (fugitive) =	NA	NA	0.020	0.008	0.024	0.008
PM-10 (fugitive) =	NA	NA	0.011	0.003	0.014	0.004

Baghouse #6
Treatment/Packaging Facility Line #1

Emission factors:		Units:	Source:
TSP =	0.081	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.
PM-10 =	0.034	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.

Potential to Emit

Maximum hourly throughput:	29.7	tons/hr
Maximum annual throughput:	39,828.8	tons/year

Current Operations:

Hourly throughput:	5.0	tons/hour (2.5 x 0.8)
Annual throughput:	8,166.0	tons/year (14,275 x 0.8)

Projected Operations:

Projected Hourly throughput:	6.3	tons/hour
Projected Annual throughput:	10,210.0	tons/year

Notes (controlled and fugitive emissions):

1. Assume 90% of emissions captured by baghouse
2. Assume 10% of emissions become fugitive
3. Assume 95% of baghouse emissions captured
4. Assume 80% of product goes through treatment and packaging line #1

Hourly PTE Equations: = 29.7 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.8 = 39,828.8 ton/yr
Hourly Current Equations: = 5.0 ton/hr
Annual Current Equations: = 8,166 ton/yr
Hourly Projected Equations: 5.0 ton/hr x 1.25 = 6.25 ton/hr
Annual Projected Equations: 8,166 ton/yr x 1.25 = 10,210 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled)	1.81	1.21	0.305	0.249	0.381	0.311
PM-10 (Uncontrolle	1.01	0.66	0.170	0.139	0.213	0.174
TSP (baghouse) =	NA	NA	0.014	0.011	0.017	0.014
PM-10 (baghouse)	NA	NA	0.008	0.006	0.010	0.008
TSP (fugitive) =	NA	NA	0.031	0.025	0.038	0.031
PM-10 (fugitive) =	NA	NA	0.017	0.014	0.021	0.017

Baghouse #7
Corn Sheller

Emission factors:		Units:	Source:
TSP =	0.061	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.
PM-10 =	0.034	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.

Potential to Emit

Maximum hourly throughput:	4.8	tons/hr
Maximum annual throughput:	9,957.2	tons/year

Current Operations:

Hourly throughput:	3.8	tons/hour
Annual throughput:	1,653.0	tons/year

Projected Operations (25% growth)

Projected Hourly throughput:	3.8	tons/hour
Projected Annual throughput:	2,066.3	tons/year

Notes (controlled and fugitive emissions):

1. Assume 80% of emissions captured by baghouse
2. Assume 10% of emissions become fugitive
3. Assume 95% of baghouse emissions captured
4. Assume 20% of product goes through sheller line
5. Assume 10 % of product come out of sheller
6. Assume product weight is 20% higher going into sheller to account for dry cobb and husk

Hourly PTE Equations: = 4.8 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.2 =9,957.2 ton/yr
Hourly Current Equations: = 3.8 ton/hr
Annual Current Equations: = 1,653.0 ton/yr
Hourly Projected Equations: = 3.8 ton/hr
Annual Projected Equations: 1,653.0 ton/yr x 1.25 = 2,066 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled)	0.29	0.30	0.232	0.050	0.290	0.063
PM-10 (Uncontrolle	0.16	0.17	0.129	0.028	0.000	0.000
TSP (baghouse) =	NA	NA	0.010	0.002	0.013	0.003
PM-10 (baghouse) =	NA	NA	0.006	0.001	0.007	0.002
TSP (fugitive) =	NA	NA	0.023	0.005	0.029	0.006
PM-10 (fugitive) =	NA	NA	0.013	0.003	0.016	0.004

Baghouse #6
Mini-pack Line

Emission factors:		Units:	Source:
TSP =	0.061	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.
PM-10 =	0.034	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Headhouse and grain handling.

Potential to Emit

Maximum hourly throughput:	0.9	tons/hr
Maximum annual throughput:	2,489.3	tons/year

Current Operations:

Hourly throughput:	0.5	tons/hour
Annual throughput:	496.0	tons/year

Projected Operations (25% growth)

Projected Hourly throughput:	0.5	tons/hour
Projected Annual throughput:	620.0	tons/year

Notes (controlled and fugitive emissions):

1. Assume 90% of emissions captured by baghouse
2. Assume 10% of emissions become fugitive
3. Assume 95% of baghouse emissions captured
4. Assumes 5% of product through mini-pack line

Hourly PTE Equations: = 0.9 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.05 =2,489.3 ton/yr
Hourly Current Equations: = 0.5 ton/hr
Annual Current Equations: = 496.0 ton/yr
Hourly Projected Equations: = 0.5 ton/hr
Annual Projected Equations: 496.0 ton/yr x 1.25 = 620.0 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP (Uncontrolled) =	0.06	0.06	0.031	0.015	0.038	0.019
PM-10 (Uncontrolled) =	0.03	0.04	0.017	0.008	0.017	0.011
TSP (baghouse) =	NA	NA	0.001	0.001	0.002	0.001
PM-10 (baghouse) =	NA	NA	0.0008	0.0004	0.0010	0.0005
TSP (fugitive) =	NA	NA	0.003	0.002	0.004	0.002
PM-10 (fugitive) =	NA	NA	0.002	0.001	0.002	0.001

Supplement Application, Process Emissions

Emission factors for Vitavax 34:			
VOC =	5.12	lb/gal	(9.6626 x 0.53)
Ethylene Glycol	1.45	lb/gal	(9.6626 x 0.30 x 0.5
Captan	0	lb/gal	

Emission factors for Captan:			
VOC =	4.76	lb/gal	(10.16 x 0.47)
Ethylene Glycol	0	lb/gal	
Captan	0.759968	lb/gal	(10.16 x 0.374 x 0.2)

Source:
1. worst case for corn: VOCs and ethylene glycol (EG) come from Vitavax 34 (carboxin), which is 53% volatile for VOCs and 30% EG (a classified VOC) and has a density of 9.6626 lb/gal. Worse Case assumption made that 50% of EG is coated on seed and 50% becomes airborne due to very low vapor pressure (0.08mmm hg) of EG and 100% realease of VOCs.

2. Worst case for bean/peas: VOCs and Captan come from Captan 400, which is 47% volatile for VOCs and Captan is a powder with a water solubility of 0.0003 g/100 ml, and has a density of 10.16 lb/gal. Worse Case assumption made that 80% of Captan is coated on seed and 20% becomes airborne in liquid mixture and 100% of VOCs released.
3. Application rate is 2.5 oz/100lb of seed or 0.39 gallon of seed

Vitavax 34/corn treatment/packaging line #2

Potential to Emit		
Maximum hourly throughput:	3.9	tons/hr
Maximum annual throughput:	4,729.7	tons/year
Maximum chemical usage:	1.53	gal/hr
Maximum chemical usage:	1,844.6	gal/yr
Current Operations:		
Hourly throughput:	0.8	tons/hour
Annual throughput:	1,356.1	tons/year
Chemical usage (per hr):	0.30	gal/hr
Chemical usage (per yr):	528.9	gal/yr
Projected Operations		
Projected Hourly throughput:	0.9	tons/hour
Projected Annual throughput:	1,695.2	tons/year
Projected Chemical usage (per hr)	0.4	gal/hr
Projected Cohemical usage (per yr	661.1	gal/yr

Captan/pea bean treatment

Potential to Emit		
Maximum hourly throughput:	35.3	tons/hr
Maximum annual throughput:	42,567.0	tons/year
Maximum chemical usage:	13.8	gal/hr
Maximum chemical usage:	16,601.1	gal/yr
Current Operations:		
Hourly throughput:	7.0	tons/hour
Annual throughput:	12,205.1	tons/year
Chemical usage (per hr):	2.7	gal/hr
Chemical usage (per yr):	4,760.0	gal/yr
Projected Operations (25% growth)		
Projected Hourly throughput:	8.1	tons/hour
Projected Annual throughput:	15,256.4	tons/year
Projected Chemical usage (per hr):	3.4	gal/hr
Projected Chemical usage (per yr)	5,949.99	gal/yr

Notes (VOC and HAP emissions):

1	Assume 50% of total seeds/beans/corn are coated with pesticide
2	Assume 100% volatilization VOCs
3	Assume 0% of VOCs captured
4	Assume 50% of Ethylene glycol is released uncaptured
5	10% of throughput is corn
6	90% of throughput is bean/seed
7	Assume 20% of Captan is released uncaptured

Corn/Packaging line #2:
Hourly PTE Equations: 41.3 ton/hr x 0.1 x 0.95 = 3.92 ton/hr
Annual PTE Equations: 49,788 ton/yr x 0.1 x 0.95 = 4,729.7 ton/yr
Hourly Current Equations: 8.2 ton/hr x 0.1 x 0.95 = 0.78 ton/hr
Annual Current Equations: 14,275 ton/yr x 0.1 x 0.95 = 1,356.1 ton/yr
Hourly Projected Equations: 9.5 ton/hr x 0.1 x 0.95 = 0.90 ton/hr
Annual Projected Equations: 17,944 ton/yr x 0.1 x 0.95 = 1,695.2 ton/yr

Bean/peas/Packaging line #1:
Hourly PTE Equations: 41.3 ton/hr x 0.9 x 0.95 = 35.31 ton/hr
Annual PTE Equations: 49,788 ton/yr x 0.9 x 0.95 = 42,567.0 ton/yr
Hourly Current Equations: 8.2 ton/hr x 0.9 x 0.95 = 7.01 ton/hr
Annual Current Equations: 14,275 ton/yr x 0.9 x 0.95 = 12,205.1 ton/yr
Hourly Projected Equations: 9.5 ton/hr x 0.9 x 0.95 = 8.1 ton/hr
Annual Projected Equations: 17,944 ton/yr x 0.9 x 0.95 = 15,256.4 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
VOC =	73.57	44.36	14.61	12.72	16.57	15.69
Ethylene Glycol	2.22	1.34	0.44	0.38	0.50	0.48
Captan	10.46	6.31	2.08	1.81	2.36	2.23
Total HAPs	12.68	7.64	2.52	2.19	2.86	2.71

Corn Receiving

Emission factors:		Units:	Source:
TSP =	0.054	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain receiving - straight truck. The emission factor assumes dry corn and weight is based on what emission would be if corn were dry. All emissions are assumed fugitive with no emission controls.
PM-10 =	0.0177	lb/ton	

Potential to Emit

Maximum hourly throughput:	6.0	tons/hr
Maximum annual throughput:	4,978.6	tons/year

Current Operations:

Hourly throughput:	4.1	tons/hour
Annual throughput:	1,653.0	tons/year

Projected Operations (25% growth)

Projected Hourly throughput:	5.1	tons/hour
Projected Annual throughput:	2,066.3	tons/year

1. Based on 10% of product throughput
2. Based on dry corn weight with no emission controls

Hourly PTE Equations: = 5.95 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.1 = 4,978.6 ton/yr
Hourly Current Equations: = 4.13 ton/hr
Annual Current Equations: = 1,653 ton/yr
Hourly Projected Equations: 4.1 ton/hr x 1.25 = 5.1 ton/hr
Annual Projected Equations: 1,653 ton/yr x 1.25 = 2,066.25 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP =	0.3213	0.13	0.2230	0.0446	0.2764	0.5528
PM-10 =	0.1063	0.04	0.0731	0.0146	0.09	0.0183

Maxon Burner, Corn Dryer, Combustion Emissions

Emission factors:		Units:	Source:
TSP =	7.6	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-2
PM-10 =	7.6	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-2
Sulfur =	0.3	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-2
SO_2 =	0.6	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-2
NO_x =	100	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-1
CO =	84	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-1
VOC =	5.5	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-2
Pb =	0.0005	lb/million ft³	AP-42, 7/98, Section 1.4, Table 1.4-2
As =	2.0E-04	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Be =	1.2E-05	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Cd =	1.1E-03	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Cr =	1.4E-03	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Pb =	5.0E-04	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Hg =	2.6E-04	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Mn =	3.8E-04	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Ni =	2.1E-03	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Se =	2.4E-05	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Benzene =	2.1E-03	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Toluene =	3.4E-03	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Formaldehyde =	7.5E-02	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3
Napthalene =	6.1E-04	lb/1020 Btu	AP-42 Fifth Edition (7/98) Section 1.4, Table 1.4-3

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP =	1.14E+00	5.01E+00	1.14E+00	1.56E+00	1.14E+00	1.56E+00
PM-10 =	1.14E+00	5.01E+00	1.14E+00	1.56E+00	1.14E+00	1.56E+00
Sulfur =	4.52E-02	1.98E-01	4.52E-02	6.17E-02	4.52E-02	6.17E-02
SO_2 =	9.03E-02	3.96E-01	9.03E-02	1.23E-01	9.03E-02	1.23E-01
NO_x =	1.51E+01	6.60E+01	1.51E+01	2.06E+01	1.51E+01	2.06E+01
CO =	1.26E+01	5.54E+01	1.26E+01	1.73E+01	1.26E+01	1.73E+01
VOC =	8.28E-01	3.63E+00	8.28E-01	1.13E+00	8.28E-01	1.13E+00
Pb =	7.53E-05	3.30E-04	7.53E-05	1.03E-04	7.53E-05	1.03E-04
As =	9.22E-06	4.04E-05	9.22E-06	1.26E-05	9.22E-06	1.26E-05
Be =	5.53E-07	2.42E-06	5.53E-07	7.55E-07	5.53E-07	7.55E-07
Cd =	5.07E-05	2.22E-04	5.07E-05	6.92E-05	5.07E-05	6.92E-05
Cr =	6.45E-05	2.83E-04	6.45E-05	8.81E-05	6.45E-05	8.81E-05
Pb =	2.30E-05	1.01E-04	2.30E-05	3.14E-05	2.30E-05	3.14E-05
Hg =	1.20E-05	5.26E-05	1.20E-05	1.64E-05	1.20E-05	1.64E-05
Mn =	1.75E-05	7.67E-05	1.75E-05	2.39E-05	1.75E-05	2.39E-05
Ni =	9.66E-05	4.24E-04	9.66E-05	1.32E-04	9.66E-05	1.32E-04
Se =	1.11E-06	4.84E-06	1.11E-06	1.51E-06	1.11E-06	1.51E-06
Benzene =	9.66E-05	4.24E-04	9.66E-05	1.32E-04	9.66E-05	1.32E-04
Toluene =	1.57E-04	6.86E-04	1.57E-04	2.14E-04	1.57E-04	2.14E-04
Formaldehyde =	3.46E-03	1.51E-02	3.46E-03	4.72E-03	3.46E-03	4.72E-03
Napthalene =	2.81E-05	1.23E-04	2.81E-05	3.84E-05	2.81E-05	3.84E-05

Unchanging Operational Knowns:

Rated Heat Input =	47.00	MMBtu/hr
Maximum Sulfur Content =	0.02	%
Operating hours	24	hr/day

Potential to Emit:

Total Fuel Use =	1,319	million ft^3/yr
Operating hours	8760	hr/yr

Current Operations:

Total Fuel Use =	411	million ft^3/yr
Operating hours	2730	hr/yr

Projected Operations (30% growth)

Total Fuel Use =	513.75	million ft^3/yr
Operating hours	3412.5	hr/yr

Note:

PTE fuel use was based on the current fuel use of 411 million ft^3/yr and operating 2730 hr/yr, therefore fuel use is 0.15055 million ft^3/hr. If the unit operates 8760 hr/yr then fuel use would be 1,319 million ft^3/yr.

Corn drying process emissions
Maxon Burner, Corn Dryer, Process Emissions

Emission factors:		Units:	Source:
TSP =	0.47	lb/ton	AP-42, 3/03, Section 9.9.1, Table 9.9.1-1, Grain drying -Rack dryer with self cleaning screens. The emission factor assumes dry corn and weight is based on what emission would be if corn were dry. All emissions are assumed fugitive with no emission controls.
PM-10 =	0.12	lb/ton	
VOC =	3.2	lb/ton	VOC - NH_3, FIRE Emission Factor from Table 2

Potential to Emit

Maximum hourly throughput:	2.4	tons/hr
Maximum annual throughput:	4,978.6	tons/year

Current Operations:

Hourly throughput:	1.1	tons/hour
Annual throughput:	1,653.0	tons/year

Projected Operations (25% growth)

Projected Hourly throughput:	1.4	tons/hour
Projected Annual throughput:	2,066.3	tons/year

1. Based on 10% of product throughput
2. Based on Dry corn weight with no emission controls

Hourly PTE Equations: = 2.37 ton/hr
Annual PTE Equations: 49,786 ton/yr x 0.1 = 4,978.6 ton/yr
Hourly Current Equations: = 1.1 ton/hr
Annual Current Equations: = 1,653 ton/yr
Hourly Projected Equations: 1.1 ton/hr x 1.25 = 1.37 ton/hr
Annual Projected Equations: 1,653 ton/yr x 1.25 = 2,066.25 ton/yr

	PTE		Current		Projected	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP =	1.11	1.17	0.53	0.39	0.66	0.49
PM-10 =	0.28	0.30	0.14	0.10	0.17	0.12
VOC =	7.58	7.97	3.62	2.64	4.52	3.31

APPENDIX B

Seminis Vegetable Seeds

P-040023

AIRS Information

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Seminis Vegetable Seeds
Facility Location: Nampa
AIRS Number: 027-00072

AIR PROGRAM / POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	B							U
CO	B							U
PM_{10}	B							U
PT (Particulate)	B							U
VOC	B							U
THAP (Total HAPs)	B							NA
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

APPENDIX C

Seminis Vegetable Seeds

P-040023

Modeling Analysis

MEMORANDUM

DATE: June 28, 2005

TO: Harbi Elshafei, Air Quality Permitting Analyst 3 – Air Program Division

FROM: Kevin Schilling, Modeling Coordinator – Stationary Sources, Air Program Division KS

PROJECT NUMBER: ~~P-030053~~ P-040023

SUBJECT: Modeling review for the Seminis Vegetable Seeds Permit to Construct for operations at their facility in Nampa, Idaho.

1.0 SUMMARY

Seminis Vegetable Seeds (Seminis) submitted an application to operate their seed processing facility located in Nampa, Idaho. Air quality analyses involving atmospheric dispersion modeling of emissions associated with operations at the facility were submitted in support of a permit to construct (PTC) application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). Tetra Tech EM Inc. (Tetra Tech), Seminis' consultant, conducted the ambient air quality analyses.

A technical review of the submitted air quality analyses was conduced by the Department of Environmental Quality (DEQ). DEQ also conducted independent analyses to assess the potential for emissions from the source to cause or significantly contribute to an exceedance of ambient air quality standards. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed modification were below significant contribution levels (SCLs); or b) that predicted pollutant concentrations from facility-wide emissions, when appropriately combined with background concentrations, were below applicable air quality standards. Impacts of Toxic Air Pollutants (TAPs) were all below allowable increments of IDAPA 58.01.01.585 and 586. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Emission quantities are only slightly above modeling thresholds and modeled ambient impacts are well below standards.	Atypical permit provisions to further protect ambient air quality are not necessary.

2.0 BACKGROUND INFORMATION

2.1 *Need for Ambient Air Impact Analyses*

DEQ determined Seminis needed a PTC for operation of their existing facility. IDAPA 58.01.01.203.02 requires that the stationary source not cause or significantly contribute to a violation of any air quality standard.

2.2 *Applicable Air Quality Impact Limits and Modeling Requirements*

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.2.1 Area Classification

The Seminis facility is located in Canyon County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). There are no Class I areas within 10 kilometers of the facility.

2.2.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources of the facility exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.91, then a full impact analysis is typically necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Carbon monoxide (CO)	8-hour	500	10,000[j]	Maximum 2nd highest[g]
	1-hour	2,000	40,000[j]	Maximum 2nd highest[g]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[g]
	3-hour	25	1,300[j]	Maximum 2nd highest[g]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]
Lead (Pb)	Quarterly	NA	1.5[h]	Maximum 1st highest[g]

a. IDAPA 58.01.01.006.91
b. Micrograms per cubic meter
c. IDAPA 58.01.01.577 for criteria pollutants
d. The maximum 1st highest modeled value is always used for significant impact analysis
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
f. Never expected to be exceeded in any calendar year
g. Concentration at any modeled receptor
h. Never expected to be exceeded more than once in any calendar year
i. Concentration at any modeled receptor when using five years of meteorological data
j. Not to be exceeded more than once per year

2.2.3 Toxic Air Pollutant Impact Analysis

Toxic Air Pollutant (TAP) analysis requirements for PTCs are specified in IDAPA 58.01.01.210. If the uncontrolled emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of IDAPA 58.01.01.585 or IDAPA 58.01.01.586, then air dispersion modeling must be conducted to evaluate whether TAP impacts are below applicable TAP increments. If modeled impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of IDAPA 58.01.01.585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of IDAPA 58.01.01.586, then compliance with TAP requirements has been demonstrated.

2.3 *Background Concentrations*

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources.

Background concentrations were previously provided to Tetra Tech by DEQ for use in their PTC application. These concentrations were based on PM_{10} and CO monitoring data for Nampa and default values for small town/suburban areas. Table 3 lists default background concentrations for rural/agricultural areas in Idaho.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	Annual	34.1
	24-Hour	103.0
Carbon monoxide (CO)	8-Hour	7,300
	1-Hour	19,100
Sulfur Dioxide (SO_2)	Annual	8
	24-Hour	26
	3-Hour	34
Nitrogen Dioxide (NO_2)	Annual	32

a Micrograms per cubic meter

b Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

3.0 MODELING IMPACT ASSESSMENT

3.1 *Modeling Methodology*

Table 4 provides a summary of the modeling parameters used for Tetra Tech's analyses.

Table 4. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Additional Description
Model	ISC-PRIME	Version 04269
Meteorological data	Boise surface data Boise upper air data	1987-1992
Terrain	Terrain considered	Elevation data from digital elevation model (DEM) files
Building downwash	PRIME algorithm	Building dimensions obtained from modeling files submitted
Receptor grid	Grid 1	25-meter spacing along boundary
	Grid 2	100-meter spacing out to 1,000 meters
	Grid 3	500-meter spacing out to 5,000 meters
Facility location (UTM)[a]	Easting	536 kilometers
	Northing	4,823 kilometers

a Universal Transverse Mercator

3.1.1 Modeling Protocol

A modeling protocol was submitted to DEQ prior to the application. DEQ approved the protocol and analyses were conducted in accordance with procedures and methods described in the protocol.

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, DEQ, March 14, 2003.

3.1.2 Model Selection

ISC-PRIME was used by Tetra Tech to conduct the ambient air analyses. ISCST3 cannot be used in this instance because numerous ambient air receptor locations exist within building recirculation cavities, and ISCST3 does not calculate concentrations within recirculation cavities. ISC-PRIME incorporates the PRIME downwash algorithm, which is also used in AERMOD, the proposed replacement model for ISCST3. The PRIME algorithm is superior to the existing downwash algorithms within ISCST3 and is capable of estimating concentrations within building recirculation cavities.

3.1.3 Land Use Classification

The area within a three-kilometer radius is predominantly rural. Therefore, rural dispersion coefficients were used rather than urban coefficients.

3.1.4 Meteorological Data

Tetra Tech used meteorological input files generated from Boise surface data and Boise upper air data, as requested by DEQ. These data are the most representative available for the Seminis Nampa facility.

3.1.5 Terrain Effects

The modeling analyses submitted by Tetra Tech considered elevated terrain.

3.1.6 Facility Layout

DEQ verified proper identification of the facility boundary and buildings on the site by comparing the modeling input to a facility plot plan submitted with the application and aerial photographs of the area.

3.1.7 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the modeling analyses. The Building Profile Input Program for the PRIME downwash algorithm (BPIP-PRIME) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters.

3.1.8 Ambient Air Boundary

The facility fenceline was used as the ambient air boundary. This satisfies the requirements of preventing public access, as described in the *Idaho Air Quality Modeling Guideline*.

3.1.9 Receptor Network

The receptor grids used by Tetra Tech met the minimum recommendations specified in the *Idaho Air Modeling Guideline*. This involved 25-meter spacing along the ambient air boundary, 100-meter spacing out to 1 km, 500-meter spacing out to five km, and 1,000-meter spacing out to 12 km. DEQ was not satisfied that the receptor spacing used was sufficiently dense to reasonably resolve the maximum modeled concentration. However, since emissions are only slightly above current modeling thresholds and modeled impacts are well below NAAQS, DEQ staff are confident operations at the facility will not result in ambient pollutant concentrations exceeding NAAQS.

3.2 *Emission Rates*

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application, the engineering technical memorandum, and the proposed permit. The following approach was used for DEQ verification modeling:

- All modeled emissions rates were equal to or slightly greater than the facility's emissions calculated in the PTC application or the permitted allowable rate, whichever was larger.
- Modeling results were compared to *significant contribution* thresholds. More extensive review of modeling parameters selected was conducted when model results approached applicable thresholds.

Facility-wide emissions were greater than modeling thresholds for PM_{10}, NOx, and CO. Table 5 provides unit-specific criteria (short term and long term) and TAP emissions used in the modeling analyses. TAPs were conservatively modeled by including all TAPs sources at the facility, not only those constructed after July 1, 1995.

Table 5. CRITERIA AND TAP EMISSIONS RATES USED FOR MODELING

Emission Point	Rate Used for Modeling (lb/hr)[a]				
	PM_{10}[b]	NO_x[c]	CO[d]	Captan	Ethylene Glycol
BGHS_1 (baghouse)	0.022	0.0	0.0	0.0	0.0
BGHS_2 (baghouse)	0.0024	0.0	0.0	0.0	0.0
BGHS_3 (baghouse)	0.0024	0.0	0.0	0.0	0.0
BGHS_4 (baghouse)	0.00143	0.0	0.0	0.0	0.0
BGHS_5 (baghouse)	0.0063	0.0	0.0	0.0	0.0
BGHS_6 (baghouse)	0.0095	0.0	0.0	0.0	0.0
BGHS_7 (baghouse)	0.0073	0.0	0.0	0.0	0.0
BGHS_8 (baghouse)	0.00095	0.0	0.0	0.0	0.0
BGHS_9 (baghouse)	0.00143	0.0	0.0	0.0	0.0
BG1FUG (fugitives)	0.048	0.0	0.0	0.0	0.0
BG2FUG (fugitives)	0.0159	0.0	0.0	0.0	0.0
BG5FUG (fugitives)	0.035	0.0	0.0	2.73	0.55
BG7FUG (fugitives)	0.0159	0.0	0.0	0.0	0.0
BG8FUG (fugitives)	0.0021	0.0	0.0	0.0	0.0
DRYER_1 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_2 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_3 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_4 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_5 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_6 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_7 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_8 (dryers)	0.145	0.65	1.40	0.0	0.0
DRYER_9 (dryers)	0.145	0.65	1.40	0.0	0.0
CORNREC (corn receiving area)	0.090	0.0	0.0	0.0	0.0

[a] Pounds per hour
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[c] Oxides of nitrogen
[d] Carbon Monoxide

3.3 Emission Release Parameters

Table 6 provides emissions release parameters, including stack location, stack height, stack diameter, exhaust temperature, and exhaust velocity.

Table 6. EMISSIONS AND STACK PARAMETERS

Release Point	Stack Location in UTM (m)[a]		Stack Height (m)	Modeled Diameter (m)	Stack Gas Temp. (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
	Easting	Northing				
BGHS_1	536541	4822520	1.83	0.72	ambient	0.001
BGHS_2	536537	4822535	6.1	0.86	ambient	0.001
BGHS_3	536521	4822535	6.1	0.86	ambient	0.001
BGHS_4	536521	4822558	1.22	0.17	ambient	0.001
BGHS_5	536472	4822543	3.05	0.91	ambient	0.001
BGHS_6	536480	4822572	7.62	0.4	ambient	0.001
BGHS_7	536515	4822651	7.62	1.09	ambient	0.001
BGHS_8	536390	4822582	3.66	0.49	ambient	0.001
BGHS_9	536518	4822573	1.33	1.33	ambient	0.001

VOLUME SOURCES					
Release Point	Release Location in UTM (m)		Release Height (m)	Initial Dispersion Coefficients (m)	
	Easting	Northing		Horizontal σ_{y0}	Vertical σ_{z0}
BG1FUG	536527	4822513	7.92	0.35	0.28
BG2FUG	536528	4822558	10.06	0.35	0.28
BG5FUG	536478	4822557	10.36	0.35	0.28
BG7FUG	536508	4822660	6.71	0.35	0.28
BG8FUG	536381	4822582	5.49	0.35	0.28
DRYER_1	536422	4822736	5	4.26	2.33
DRYER_2	536428	4822736	5	4.26	2.33
DRYER_3	536446	4822721	5	4.26	2.33
DRYER_4	536451	4822721	5	4.26	2.33
DRYER_5	536467	4822718	5	4.26	2.33
DRYER_6	536471	4822718	5	4.26	2.33
DRYER_7	536483	4822667	5	4.26	2.33
DRYER_8	536483	4822660	5	4.26	2.33
DRYER_9	536483	4822653	5	4.26	2.33
CORNREC	536429	4822633	3.05	1.2	2.84

[a] Meters
[b] Kelvin
[c] Meters per second

3.4 *Results*

3.4.1 Significant and Full Impact Analyses

Maximum modeled impacts of PM_{10}, NO_2, and CO were above SCLs and a full impact analysis was necessary to demonstrate compliance with NAAQS. Table 7 summarizes the results of the full impact analyses.

Table 7. RESULTS OF THE FULL IMPACT ANALYSES

Pollutant	Averaging Period	Year	Modeled Design Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Concentration ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	Annual	1989	4.5	34.1	38.6	50	77
	24-hour	1989	18.1[c]	103.0	121.1	150	81
CO	8-hour	1988	520.0[c]	7,300	7,820.0	10,000	78
	1-hour	1991	3,271.8[c]	19,100	22,371.8	40,000	56
NO_2	Annual	1989	13.9[d]	32.0	45.9	100	46

a. Micrograms per cubic meter
b. National ambient air quality standards
c. Maximum 2nd high concentration from each year modeled
d. NO_2 concentration was assumed to be equal to 0.75 of the modeled NOx concentration

3.4.2 TAP Analyses

Table 8 summarizes the ambient TAP analyses. Maximum annual impacts of uncontrolled TAPs were well below applicable AACs, thereby demonstrating preconstruction TAP compliance via IDAPA 58.01.01.210.06 (Uncontrolled Ambient Concentration). DEQ did not conduct verification analyses for TAPs because model results obtained by Tetra Tech were less than half the allowable increment for all TAPs.

Table 8. RESULTS OF THE TAPS ANALYSES

Pollutant	Averaging Period	Year	Modeled Design Concentration ($\mu g/m^3$)[a]	AAC[b] ($\mu g/m^3$)	Percent of AAC
Ethylene Glycol	24-hour	1991	5.4	6,350	0.09
Captan	24-hour	1991	26.6	250	11

a. Micrograms per cubic meter
b. National ambient air quality standards
c. Maximum 2nd high concentration from each year modeled
d. NO_2 concentration was assumed to be equal to 0.75 of the modeled NO_x concentration

4.0 CONCLUSIONS

The air quality analyses submitted with the PTC application demonstrated to DEQ's satisfaction that the proposed modification will not cause or significantly contribute to an exceedance of any air quality standard, as required by IDAPA 58.01.01.203.02.